

REMARKS/ARGUMENTS

This letter is responsive to the Office Action mailed on May 18, 2005. The claims have been amended in response to the outstanding Office Action. No new matter has been added by the amendments.

Claims 1, 3 to 47, and 56 to 63, are currently pending in the application.

Claims 1, 3 to 12, 14 to 15, 27 to 30 and 35 to 41 are Rejected to under 35 U.S.C. 103(a) in view of Wada et al, and Richards et al.

The Examiner has rejected claims 1, 3 to 12, 14 to 15, 27 to 30 and 35 to 41 under 35 U.S.C. 103(a) as being obvious in view of Wada et al. (U.S. Patent No. 6,714,236) and Richards et al. (U.S. Patent No. 6,027,257).

Specifically, in respect of claim 1, the Examiner states that Wada et al. discloses a composite camera for use in a security camera system that includes a pair of supports for holding the image capture device and that the camera system includes a processing device that detects a motion from the pictures taken by a composite camera and checks the current monitoring place of the composite camera, thus, determining an object location for the object based on digital images. The composite camera acts as a position control device for rotating the support and the image capture device about two axes so that the object remains within a centre region of the digitized image frames and that it is coupled to a support.

The composite camera includes a base, a first motor mounted on the base for generating a first rotational movement (pan) based on the object location and a first rotational member connected to the first motor for rotation about a first axis. Additionally, the Examiner states that the composite camera includes a second motor mounted on the base for generating a second rotational movement (tilt) based on the

object location and a second rotational member connected to the second motor for rotation about the second axis. The Examiner acknowledges that the Wada et al. reference fails to disclose the specific components and configuration of the first motor and second motor.

However, the Examiner states that Richards et al. discloses a pan-tilt unit for positioning videoconferencing or surveillance cameras. The pan-tilt unit includes a first motor comprising a first shaft member having a first shaft rotation axis longitudinally concentric with the first shaft member and a second motor comprising a second shaft member having a second shaft rotation axis longitudinally concentric with the second shaft member such that the first shaft rotation axis and the second shaft rotation axis are motionless and fixed relative to one another and such that when the first shaft member rotates the second shaft rotation axis remains fixed relative to the first shaft rotation axis.

Therefore, the Examiner states that it would have been obvious for one skilled in the art to have been motivated to include a pan-tilt unit as disclosed by Richards et al. in the security camera system disclosed by Wada et al. The Examiner states that doing so would provide a means for ensuring that a pan motor and a tilt motor are stationary relative to the base during panning and tilting operations so that it is not necessary to physically move the mass of either motors.

The Applicant respectfully submits that claims 1 and 27, as amended, of the present invention are not obvious in view of Wada et al. and Richards et al.

In response, the Applicant has amended independent claims 1 and 27 to better define the invention and to clarify the distinction between this invention and the cited prior art references.

Specifically, independent claims 1 and 27 have been amended to more specifically define that a tendon is used to couple the second shaft member to the second rotatable member and that at least one point on the tendon remains substantially fixed relative to at least one point on the first rotation axis when said first shaft member rotates and said second shaft member is stationary such that the first rotatable movement produced by the rotation of the first shaft element is substantially independent of the second rotatable movement produced by the rotation of the second shaft element. Support for these amendments can be found in the present disclosure at page 14, line 25 to page 19, line 6, page 33 line 18 to page 34 line 20, and FIGS. 3A, 3B, 7, 13A, 13B.

In contrast, neither the security camera system disclosed in Wada et al. or the pan-tilt unit of Richards et al. disclose the use of a first tendon to couple the first shaft member to first rotatable member and a second tendon to couple the second shaft member to the second rotatable member. Tendons are flexible linear devices that transmit linear force by resisting length increase between ends. Rather, Richards et al. uses gears which are rigid toothed circular devices that transmit rotational force from one axis to another typically altering angular velocity and torque. The mechanical limitations associated with gear assemblies prevent independent operation of the pan and tilt assemblies of the pan-tilt unit of Richards et al. as will be further discussed.

Also, neither Wada et al. or Richards et al. disclose that at least one point on a tendon that couples the second shaft member to the second rotatable member remains substantially fixed relative to at least one point on the first rotation axis when said first shaft member rotates and said second shaft member is stationary such that the first rotatable movement produced by the rotation of the first shaft element is substantially independent of the second rotatable movement produced by the rotation of the second shaft element.

In contrast, Richards et al. discloses a pan-tilt unit in which a tilt motor drive shaft (52) is coupled to the tilt bed (26) through a tilt shaft (60), tilt pinion (58) and tilt drive gear (62).

(Richards et al., col. 4, lines 15 to 28). Neither of the tilt shaft (60), tilt pinion (58) and tilt drive gear (62) contain a point that remains substantially fixed relative to at least one point on the first rotation axis of the pan platform (24) when the pan motor (34) rotates the pan shaft (42), pan pinion (40), pan drive gear (44) and pan cluster gear (46) and when the tilt shaft (60) and tilt motor (36) are stationary.

Rather, in Richards et al., the movement of the tilt bed (26) about the pan and tilt axis (30, 32) are clearly interdependent. As stated in Richards et al., "it should be observed that movement of the tilt bed (26) about the pan and tilt axes (30,32) are not entirely independent. For example, rotation of the pan platform (24), and therefore the tilt bed (26), about the pan axis (30) during a panning operation causes the tilt bed (26) to rotate about the tilt axis (32) due to the interaction of the drive shaft coupling (66) between the tilt bed (26) and the drive shaft (52). That is, panning the tilt bed (26) will induce the tilt bed to rotate about the tilt axis (32) absent some form of compensation." (Richards et al., col. 5 lines 37 to 48 emphasis added)

As clearly described in Richards et al., the degree of rotation of the tilt rotatable member around the tilt rotation axis is dependent on the movement of both pan and tilt shafts and compensation is required in order to produce a desired combination of pan and tilt movement (Richards et al., col. 5, line 46 to 48). The interaction of the drive shaft coupling (66) between the tilt bed (26) and the drive shaft (52) prevents independent control.

As a consequence, none of the points on any of the various tilt shafts, pinions, drive or cluster gears remain substantially fixed relative to any points on the first rotation (i.e. pan) axis when the pan shaft and pinion assembly rotates and the tilt shaft and pinion assembly is stationary. Equivalently, none of the various pan shafts, pinions, drive or cluster gears remain substantially fixed relative to any points on the second rotation (i.e. tilt) axis when the tilt shaft and pinion assembly rotates and the pan shaft and pinion assembly is stationary.

This difference can also be illustrated by example by considering that as conventionally known, if pulling action is applied to one end of a tendon then movement is caused at the other end. Accordingly, when a pulling action is applied to one end of a tendon, the entire tendon (i.e. all points) move in space. In the case where a tendon is engaged with a wheel and rotates a wheel around the wheel's axis, all points of the tendon would by necessity move relative to the wheel's axis.

As illustrated in FIGS. 1 and 2 of Richards et al. even if drive pinion (78) can be considered to "pull" on the tilt gear (80) by turning tilt gear (80) is not equivalent to a tendon for coupling the tilt motor (36) to the tilt bed (26) such that at least one point on the tendon remains substantially fixed relative to at least one point on the first rotation axis when said first shaft member rotates and said second shaft member is stationary. This is because when the pan motor shaft (42) rotates and the tilt motor shaft (60) is stationary, drive pinion (78) causes tilt gear (80) to turn on its axis and no point on tilt gear (80) remains fixed relative to the tilt axis (32).

As acknowledged by the Examiner, the Wada et al. reference does not disclose the specific components and configuration of the claimed first motor and second motor and associated tendon structure.

The Applicant respectfully submits that the security camera system disclosed in Wada et al. and the pan-tilt unit of Richards et al. are substantially different than the motor shaft and tendon configuration claimed in claims 1 and 27 of the present invention, as amended.

Accordingly, the Applicant respectfully submits that the subject matter claimed in independent claims 1 and 27 is not taught nor suggested by the Wada et al. or Richards et al. references. It is further submitted that claims 3 to 12, 14 to 17, 28 to 30 and 35 to 41, as amended recite additional patentable features which are neither taught nor

suggested by the Wada et al. or Richards et al. references. Withdrawal of the Examiner's rejection is respectfully requested.

Claims 13, 31 and 33 to 34 are rejected under 35 U.S.C. 103(a) in view of Wada et al., Richards et al. and Morisaki

The Examiner has rejected claims 13, 31 and 33 to 34 under 35 U.S.C. 103(a) as being obvious in view of Wada et al. (U.S. Patent No. 6,714,236), Richards et al. (U.S. Patent No. 6,027,257) and Morisaki (U.S. Patent No. 5,416,513).

Specifically, the Examiner states that in respect of claim 13, the combination of the Wada et al. and Richards et al. references disclosed all of limitations according to claim 1 although Wada et al. in view of Richards et al. fails to state that the object selected is associated with the specific color and the object location is the center of the region of the selected color within the digitized frame. The Examiner states that Morisaki discloses in FIG. 1 a video camera system including an object pursuing device where the video camera of the system is moved according to the movement of the specific color of the object so that the object is always in the center portion of the image. The Examiner states that it would have been obvious for one skilled in the art to have been motivated to include the video camera system capable of moving a camera according to the color of an object as taught in Morisaki in the composite camera for use in a security system as disclosed by Wada et al. in view of Richards et al.

In respect of claims 33 and 34, the Examiner states that the video camera of the system in Morisaki is moved according to the movement of the specific color of the object so that the object is always on the center portion of the image and therefore that the centroid of the digitized image must be calculated in order to move the video camera so that the object is always in the center portion of the image.

The Applicant respectfully submits that claims 13, 31, 33 and 34 of the present invention are not obvious in view of Wada et al., Richards et al. and Morisaki as these claims depend on claims 1 and 27 of the present invention, as amended. For the reasons discussed above, in respect of independent claims 1 and 27, as amended, it is respectfully submitted that the subject matter claimed in claims 13, 31, 33 and 34 of the present invention are not taught nor suggested by the Wada et al., Richards et al. or Morisaki references.

Accordingly, the Applicant submits that claims 13, 31, 33 and 34 are not obvious in view of the Wada et al., Richards et al. and Morisaki references. Withdrawal of the Examiner's rejection is respectfully requested.

Claim 32 is rejected under 35 U.S.C. 103(a) in view of Wada et al., Richards et al., Morisaki and Potts et al.

The Examiner has rejected claim 32 under 35 U.S.C. 103(a) as being obvious in view of Wada et al. (U.S. Patent No. 6,714,236), Richards et al. (U.S. Patent No. 6,027,257), Morisaki (U.S. Patent No. 5,416,513) and Potts et al. (U.S. Patent No. 6,593,956).

The Examiner states that it would have been obvious for someone skilled in the art to have been motivated to include the face-location tracking module (106) capable of locating a pixel in the center of a group of pixels as taught in Potts et al. in the composite camera for use in a security system as disclosed by Wada in view of Richards et al. in view of Morisaki.

The Applicant respectfully submits that claim 32 of the present invention is not obvious in view of Wada et al., Richards et al., Morisaki and Potts et al. as this claim depend on claim 27 of the present invention, as amended. For the reasons discussed above, in respect of independent claim 27, as amended, it is respectfully submitted that the

subject matter claimed in claims 32 of the present invention are not taught nor suggested by the Wada et al., Richards et al., Morisaki or Potts et al. references.

Accordingly, the Applicant submits that claims 32 are not obvious in view of the Wada et al., Richards et al., Morisaki or Potts et al. references. Withdrawal of the Examiner's rejection is respectfully requested.

Allowable Subject Matter

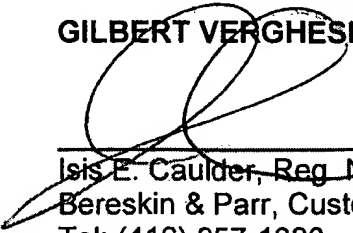
The Examiner has indicated that claims 16 to 26 have been allowed. The Applicant agrees that claims 16 to 26 are not taught nor suggested by the Wada et al., Richards et al. and Morisaki references or any other cited references.

The Examiner has also indicated that claims 42 to 47 and 56 to 63 are objected to as being dependent upon a rejected base claim but that they would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In view of the foregoing, the Applicant respectfully submits that the application is now in condition for allowance and requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

GILBERT VERGHESE



Isis E. Caulder, Reg. No. 47,275
Bereskin & Parr, Customer No. 001059
Tel: (416) 957-1680